MISSOURI
DEPARTMENT OF
NATURAL RESOURCES
Missouri Geological Survey

Land Reclamation Program

BIENNIAL REPORT 2020-2021

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Cover Image: Foster South Mine, Reclaimed Pasture Area, in Bates County.

INTRODUCTION

Mining activity in Missouri began as early as the 1740s, for mineral commodities such as lead, iron, limestone, sand and gravel. Coal mining, however, began in Missouri in the 1840s. With no legislation or regulation of these operations, there were as many as 67,000 acres left unreclaimed by coal-mining operations. An estimated 40,000 acres were left abandoned from the mining of other commodities. Missouri was left with a legacy of acid-mine drainage, dangerous highwalls, toxic mine spoils, dangerous mine shaft openings, unvegetated and barren soils, soil erosion and stream sedimentation.

The Missouri Department of Natural Resources' Land Reclamation Program was established in 1974 to regulate present mining operations and to reduce or eliminate the issues caused by coal mining operations prior to when laws regulating such operations were enacted. The Land Reclamation Program works to ensure today's mining industry remains in compliance with Missouri Law Chapter 444, RSMo (Rights and Duties of Miners and Mine Owners). The law includes several chapters that are enforced by separate units within the Land Reclamation Program. The Industrial and Metallic Minerals Mining unit is responsible for sections "The Metallic Minerals Waste Management Act," sections 444.350 to 444.380, RSMo, and "The Land Reclamation Act," sections 444.760 to 444.790, RSMo. The Projects and Inspection unit and the Abandoned Mine Land and Permit unit are responsible for "The Surface Coal Mining Law," sections 444.800 to 444.970, RSMo.

The state regulations further define these laws. Citizens can find these laws in their entirety in "Rules of Department of Natural Resources Division 40 – Missouri Mining Commission," Chapters 1-10 for coal and industrial minerals. Metallic Minerals regulations are found in "Rules of Department of Natural Resources Division 45 – Metallic Minerals Waste Management." Chapters 1-8.

The ultimate responsibility of the program is to ensure mine sites in Missouri are returned to a suitable land use and the adverse effects from active mining operations are minimized. When properly reclaimed, these areas can once again be used as farmland or wildlife areas. Wildlife habitat remains a primary concern of the Land Reclamation Program. Whenever possible, abandoned mines are reclaimed with wetlands, native prairie grasses and trees that are part of Missouri's history. In no way does declining coal production decrease the responsibilities of the Land Reclamation Program.

Monthly inspections of each mine continue to be performed long after the last ton of coal is removed. Revisions to permits and reclamation changes continue to be submitted for review and approval, as operators fine-tune their post-mining land use plans. Bond release requests increase in number and in size as more ground is reclaimed to acceptable standards. In effect, reclamation activities consume a far larger percentage of time and effort than the actual mining of coal itself.

This biennial report provides information and statistical summaries concerning the activities and business accomplishments of the Land Reclamation Program and its efforts to reclaim mined land during the calendar years of 2020 and 2021.

ORGANIZATION

The Land Reclamation Program was originally established in the Omnibus State Reorganization Act of 1974. This act created the Missouri Department of Natural Resources and placed the Land Reclamation Commission (created by Chapter 444, RSMo) under its auspices. The Land Reclamation Commission underwent a name change in 2014 to the Missouri Mining Commission which has the responsibility of directing staff and operations of the program within the department's Missouri Geological Survey.

The 8-member commission includes three statutory members – the state geologist, the director of the Missouri Department of Conservation and the staff director of the Clean Water Commission. The governor, with Senate approval selects five public members. Of these five, three may be of the same political party. Two members of the commission may have a direct link with the mining industry with one member having surface mining experience and the other having subsurface mining experience. There are two vacancies on the commission, one representative for the mining industry and one representing the public.

The Land Reclamation Program consists of the Administrative, Abandoned Mines Lands, Coal, Industrial and Metallic Mineral Mining units. A total of 17 full time staff members are divided between the four units. Together they are responsible for reclaiming abandoned mine lands and conducting inspections at all active mining operations in Missouri.

For more information, contact the department's Land Reclamation Program at 800-361-4827 or 573-751-4041.

COAL MINING

Introduction and Purpose

Through growing national concern over the environmental degradation caused by coal mining, Public Law 95-87 was passed in 1977 by the U.S. Congress. This law, also known as "The Surface Mining Control and Reclamation Act" dictated specific requirements for the reclamation of coal mined land, and established state regulatory authorities for the enforcement and monitoring of surface mine reclamation activities. The act also established programs and funding for reclaiming coal mine lands mined prior to May 2, 1977.

On May 3, 1978, the legislature amended Missouri's Strip Mine Law establishing section 444.535, RSMo, commonly referred to as the Interim Program Law. Requirements of this law include:

- **Topsoil must be removed and replaced to a minimum 6-inch depth.**
- **All prime farmland soils must be removed and replaced to 40-inch depth.**
- **All mined land must be reclaimed to an equal or better land-use capability.**
- **Mined land must be backfilled and graded to approximate original contour.**
- **Coal waste and other acid-or toxic-forming material must be covered with a minimum of 4 feet of non-toxic material.**
- **A permanent vegetative cover compatible with the pre-mining land use must be established.**

On May 17, 1982, the Missouri Legislature passed The Surface Coal Mining Law (sections 444.800 to 444.980) to match federal standards established in the Surface Mining Control and Reclamation Act. The law made changes to the permitting process and granted the Land Reclamation Commission the authority to administer the abandoned mine land program. Coal companies were now required to submit baseline information about the hydrology, geology, soils, fish and wildlife and cultural resources of the proposed mining area, along with a detailed description of the proposed operation and reclamation plan. The most significant change to the reclamation requirements was that prime farmland soils must be removed and replaced to a 48-inch depth. These requirements, known as the Permanent Program Law, continue in effect to date.

Missouri coal production declined from 4.2 million tons in 1987 to approximately 50 thousand tons by the end of fiscal year 2021. This decline is largely due to industry demands for low sulfur, western coal needed by power plants to reduce air pollution and meet emission standards required by the federal Clean Air Act. Most of Missouri's coal reserves contain relatively high sulfur content, ranging from 2-7% by weight. However, Missouri coal has a relatively high British Thermal Unit (BTU), compared to western coal. Some power plants and some cement kilns have opted to mix Missouri's coal with lower BTU western coal to increase energy production without exceeding sulfur emissions.

During the last 21 years, coal mining was concentrated in an area in southwestern Missouri where in places, coal seams contain lower levels of sulfur. The 507 acre Foster South mine located in Bates County continued to mine coal until June 2021 when the demand for Missouri coal diminished due to a change in the operations of the La Cygne power plant who was primary user of Missouri coal. The mine site was completely reclaimed by August 2021. In October 2021, once again Missouri coal was sought after due to higher cost of natural gas and western coal by both the La Cygne power plant and Monarch Cement Company, in Humboldt, Kansas. The Foster South Mine reopened in November 2021, to recover the remaining coal reserves still under the expansion permit. The reclamation liability release of the Hume Mine permit 2005-01CTE2 and the Blue Mound Mine permit 1990-01 left a total of eight permitted sites at five different locations in the state under reclamation with only one permit being mined.

Land Reclamation Program staff closely monitor the coal mining operation, including both coal removal and reclamation activities. Monthly inspections of each permit site are performed to ensure reclamation requirements are adhered to and continue until the reclamation liability release proving hydrologic balance of surface and groundwater, soil stability and vegetative production for a minimum of five years after final grading and seeding.

Permitting

Staff members are responsible for reviewing permit revisions and new permit applications. Land Reclamation Program staff personnel are professionally trained in specific technical areas and are responsible for reviewing technical plans with respect to their area(s) of expertise. Technical areas that must be reviewed include engineering, blasting, soil science, geology, hydrology, revegetation, land use plans, fish and wildlife protection, cultural and historical resources and reclamation technology. Staff members review all coal permit applications for adequacy and recommend approval or denial to the Land Reclamation Program staff director. Staff also conduct regular evaluations of existing permits and provide technical assistance to the mining industry and the public.

A thorough review of surface coal mining permit applications, permit revisions and other permit-related actions are necessary to ensure all requirements of the law and regulations are met.

Reviewing permit processes includes determining all applications, as well as the review process itself meet all legal and administrative requirements. The permitting requirements for coal mining are extensive, requiring careful evaluation of diverse and comprehensive environmental topics such as soil characteristics, surface and subsurface water quality controls, fish and wildlife information, cultural resources and land use planning. Reviews also focus on specific details such as engineering designs for sedimentation ponds and water diversions, blasting plans and hydrogeologic data to determine the probable hydrologic consequences of mining. Other permitting responsibilities include evaluating each applicant's legal compliance history with past mining activities and ensuring all public review requirements are fulfilled. Staff members also coordinate with other regulatory agencies to ensure the company proposing to conduct the mining activity has obtained other necessary environmental clearances and permits.

During this period, no permits were issued. At the end of 2021, there were eight active permits totaling 1,822.7 acres with $13,350,774 in bonding being held by the program.

Bond Releases

Reclamation begins immediately after coal is removed from a strip mine pit. Regulations dictate a pit must be completely backfilled and graded no later than 180 days after coal removal. Topsoil must then be redistributed within an additional 270 days. The area must then be seeded during the first available growing season, with specific vegetation sufficiently established to control erosion by the end of the second year. Sediment ponds, diversions, explosive storage areas and maintenance pads also are subject to reclamation requirements once they become inactive or are no longer needed as part of the mining operation. Only when these requirements are met can an operator obtain a release of reclamation bonds.

In 2006, bonding requirements were changed for surface coal mines from a bond pool, with a flat bonding rate for all areas, to full cost bonding. Full cost bonding requires an engineering evaluation of the area to be mined to determine the worst case scenario in terms of cost to reclaim should the company, for whatever reason, be unable to complete full reclamation. The bond amount is determined by the Land Reclamation Program and is then posted by the company before a permit to mine coal is approved and issued. The bond is held in escrow by the Land Reclamation Program until such time as reclamation is completed and approved by the staff director of the program. Bonds are released in phases as regulated reclamation milestones are met.

Reclamation liability releases during this period include Alternate Fuels Incorporated permit 1990-01 for 303 acres with bonding of $177,750; Continental Coal Inc. Hume Mine permit 2005-01CTE2 for 363.3 acres with bonding of $184,130, and the Hume West mine received a release for Phase I/II/III for 262.4 acres with bonding of $246,351 leaving 16.6 acres still permitted and bonded for Phase III at $10,000.

During 2021, the Foster South Mine permit 2015-01E2 ceased the mining operations and completed reclamation and then reopened the mine. Bonding was reduced from $805,268 to $261,066 in August 2021, after reclamation completion. Bonding was increased to $764,624 when mining operation resumed in October 2021.

Reclamation completed at Hume West Mine.

Alternate Fuels Incorporated (AFI) Permits

As noted in the 2008-2009 report, mentioned here for background information: In accordance with the legal consent agreement entered into with Continental Insurance and Beachner Construction an over bonded amount of $144,000.00 was released after the sureties mobilized for reclamation. The release was to the sureties for a portion of a permit associated with AFI. Shortly after the surety's mobilization one of the landowners filed suit against Missouri for the reclamation plan that had been approved. Several months following the filing of the lawsuit AFI received a multi-million dollar court settlement from the state of Missouri for interfering in a business deal. The company filed bankruptcy as there are more financial claims against the company then available funds. Since the company does have the financial resources to perform the reclamation the sureties have suspended any further work until it is legally clear what reclamation plan will be followed and if the company will be required to complete the reclamation.

As noted in the 2010-2011 report, Christopher J. Redmond with Husch Blackwell LLP, was assigned as the bankruptcy trustee for AFI. A reclamation plan was approved for permit #1990-01 as prepared by TRIAD Environmental Services and work began shortly afterwards. Permit revisions were approved by the Land Reclamation staff director for Permits 1991-02 and 1996-01. Two of the three landowners associated with permit 1991-02 appealed to the Administrative Hearing Commission as being adversely affected by this decision. Since reclamation is proceeding AFI was moved from annual inspections to monthly inspections starting in June 2011.

As noted in the 2012-2013 report, the bankruptcy trustee has successfully completed the initial reclamation on permit #1990-01 and the Phase I reclamation liability release was approved by the staff director in July 2012, with a bond release of sureties for that permitted acreage released in December 2012. Reclamation work continues on permit #1996-01. The litigation by the landowners of two of the three properties on permit #1991- 02 continues with only minimum reclamation activities continuing where possible on property that is not part of the litigation.

As noted in the 2014-2015 report, all vegetative productivity requirements were met on permit #1990-01. Litigation on the land use change revision for permit #1991-02 ended with the judgment, by the Southern District Appellate Court, reversing the Commission's approval of the revision. During this period, there has only been reclamation on properties that were not part of the litigation. The reclamation on permit #1996-01 was completed and vegetative productivity studies were started.

During this period of 2016-2017, permit 1996-01 has not successfully passed the prime farmland productivity. The bankruptcy trustee remains deadlocked with two of three landowners not being able to complete reclamation on permit 1991-02 and has not proceeded with any release application for 1990-01.

During the period of 2018-2019, nothing changed until Oct. 11, 2019, when the program received reclamation liability release applications for all three permits. Permit 1990-01 application requests a complete release of 303 acres, permit 1991-02 requests Phase I release of 107.1 acres and complete release of 7.5 acres, and permit 1996-01 requests Phase I release of 179.2 acres and complete release of 18.8 acres. The release approval or denial will not be effectuated until early 2020.

During the period of 2020-2021, on Jan. 20, 2020, AFI was approved for the following: permit 1990-01 complete release of all remaining 303 acres, permit 1991-02 requests Phase I release of 107.1 acres and complete release of 7.5 acres, and permit 1996-01 requests Phase I release of 179.2 acres and complete release of 18.8 acres. On Oct. 4, 2021, AFI applied for phase II/III release of 107.1 acres on permit 1991-02 and 6.3 acres on permit 1996-01, and the release application was approved Dec. 30, 2021. The remaining bonded acreage for AFI is permit 1991-02 is 330.4 acres of Phase I/II/III for a total of $826,000, and permit 1996-01 is 172.9 acres of Phase II/III for a total of $86,450.

Inspections

Reclamation activities are closely monitored to ensure the required performance standards are met and the reclamation plans approved in the company's mining permits are followed. Coal mine inspections are performed monthly. On-site inspections serve three primary functions:

- **Ensure an operation is functioning in a manner consistent with applicable state laws.**
- **Ensure an operation is fully complying with the conditions of the permit.**
- **Provide a public record on the status of mining and reclamation at a site.**

Two styles of inspections are done, termed a complete and partial. Complete inspections are required once per calendar quarter. They involve a complete review of an operator's compliance with all permit conditions and state statutes. As the name implies, partial inspections are a review of an operator's compliance with some of the permit conditions and state statutes. Many aspects of a mining operation are evaluated during an inspection to ensure the following:

- **Mining occurs within the confines of the permit.**
- **Topsoil is being salvaged and stockpiled.**
- **All stormwater runoff from mined areas enters sedimentation ponds.**
- **Pits and other areas of mine disturbance are promptly backfilled and graded.**
- **Topsoil is replaced to the required thickness.**
- **Vegetation is quickly reestablished in order to control erosion.**

Monthly inspections continue after an operation ceases mining coal. Continued monitoring ensures reclamation continues in an expedient manner and all conditions of the reclamation plan are followed. Only when an operator gains approval for a Phase II release (vegetation sufficient to control erosion) does the inspection frequency decrease from monthly to quarterly.

Foster South Mine Active Coal Pit.

Enforcement

Notices of Violation may be issued when an operator is out of compliance with the conditions of the permit or with state regulations. These are only issued after efforts to correct noncompliance through the process of conference, conciliation and persuasion prove ineffective. In general, if a notice of violation is issued, a monetary penalty also will be issued. Because inspections are conducted each month, it is rare a serious noncompliance would exist. Well-trained inspectors are able to identify when a mining or reclamation process is getting off-track in time to rectify the situation with the company before the need to issue formal enforcement occurs.

Cessation orders are an elevated form of a notice of violation and are a more serious form of enforcement. The department will issue an order when a condition or practice at the mine site constitutes imminent danger to the health and safety of the public or imminent environmental harm to land, water or air resources. Orders may require the immediate cessation of mining until the problem is corrected. Cessation orders, because of their seriousness, require immediate abatement by the operator. Failure to do so may lead to a revocation of the mining permit. Cessation orders also may be issued for a failure to abate a notice of violation within the required time frame.

If Cessation orders are not abated in a timely manner through the appropriate action on the part of the mining company, the next level of enforcement action is a Show-Cause Order. This means the operator is ordered to show why their permit should not be revoked and the reclamation bond forfeited. Show-Cause Orders may also be issued for other reasons such as for patterns of violations and uncorrected delinquent reclamation.

No violations were issued during this period.

Bonding

Missouri's Surface Coal Mining Law (sections 444.800 to 444.970, RSMo) was amended in 2006 to address changes mandated by the federal Office of Surface Mining. A condition of Missouri's reacquisition of primacy was to change the bonding system in Missouri from one of a bond pool to one of full cost bonding. The necessary regulation changes were made prior to full return of primacy to the state Feb. 1, 2006, through emergency rulemaking. These rules remained in effect until such time as the normal rulemaking process was completed.

The former bond pool approach relied on a set amount of money per acre being posted by the permit applicant prior to receiving a permit to engage in surface mining of coal and this set amount was supplemented by payments into a bond pool from all companies based upon yearly coal production. As of August 2012, there are no remaining funds left in the A Bond Pool and as of June 2014, there are no remaining funds left in the B Bond Pool.

The present full cost bond approach requires the applicant to provide an estimate of the cost to reclaim a surface mine given the worst case scenario of the mining operation. That estimate is reviewed by program engineers and, when verified, that dollar amount is the amount of bonding required to be posted prior to the issuance of any surface mining permit for coal.

Bond Forfeiture Reclamation

Each permitted coal company in Missouri is required to provide financial assurances to ensure reclamation of the site after coal removal. Upon completion of reclamation to applicable standards, the coal company receives a release from the Land Reclamation Program. Should a coal company fail to provide reclamation to applicable standards the bonds are forfeited to the Land Reclamation Program and these bonds are used by the program to provide reclamation to the site mined by the coal company.

There were no bond forfeitures during this period or remaining bond forfeiture sites.

Off-Site Impacts

An off-site impact is defined as anything resulting from a surface coal mining and reclamation activity or operation that causes a negative effect on resources, such as people, land, water, structures, etc. The program must regulate or control the mining or reclamation activity or result of the activity causing an off-site impact. In addition, the impact on the resource must be substantiated as being related to a mining and reclamation activity and must be outside the area authorized by the permit for conducting mining and reclamation activities.

There were 16 minor off-site impacts identified at the Foster South Mine during this period as a result of 15 exceedances of the National Pollution Discharge Elimination System and one exceedance of decibel limits for blasting.

ABANDONED MINE LANDS

Activities

Since the early 1840s, coal mining has at times been a major industry in the north-central and southwest portions of Missouri. As much as 6 million tons of coal was mined annually in the first three decades of the 20th century. Because mining companies gave little or no thought to the post-mining value of the land, some 67,000 acres of land were left abandoned prior to passage of Missouri's first strip mine legislation in 1971. Although nature has adequately reclaimed much of this land over the years, nearly 11,000 acres have been identified that require at least some amount of reclamation work to correct a wide range of public health, safety and environmental problems. These problems include safety hazards such as steep and unstable highwalls and embankments, open mine shafts, abandoned mining equipment and facilities, dangerous impoundments and unsanitary trash dumps. Acid mine drainage and sedimentation from exposed coal waste and mine spoils also pollute and clog streams. Subsidence caused when old underground mines collapse may damage overlying buildings.

Abandoned mine land reclamation took a giant step forward when the U.S. Congress enacted Public Law 95-87, the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The Act outlined specific requirements for the reclamation of lands mined after May 2, 1977, and established programs and funding for reclaiming abandoned mine lands. In January 1982, Missouri received approval from the federal Office of Surface Mining to operate the Abandoned Mine Land program and conduct reclamation work in the state.

Reclamation Funding

The Abandoned Mine Land (AML) activities of the Land Reclamation Program are funded by the U.S. Department of Interior's Office of Surface Mining Reclamation and Enforcement AML Reclamation fund. All of the money in the fund is collected from active coal mining companies through fees charged on the tonnage of coal mined since passage of Surface Mining Control and Reclamation Act. The Office of Surface Mining Reclamation and Enforcement distributes the fund to the eligible states and American Indian tribes. To date, Missouri has received $108.1 million in AML grants and cooperative agreements from the fund to conduct reclamation work in Missouri. Missouri has an excellent record for obligating the funds received. Through state fiscal year 2021, 97% of all grants received have been contractually obligated toward the completion of reclamation projects.

Because of steadily declining coal production since the late 1980s, Missouri and other Midwestern states have received decreasing allocations of funding. In 1987, the U.S. Congress established an annual minimum base funding level in the amount of $2 million to allow states with significant abandoned coal mine problems but limited coal production to continue their AML programs. In 2006, the minimum base funding was incrementally increased over five years to the current maximum of $3 million per year.

Inventory and Ranking

Public Law 95-87 requires that the highest priority abandoned coal mine sites be reclaimed before problems created by mining other commodities are addressed. The order in which abandoned mine land is reclaimed is initially determined by classifying the problem sites into three broad categories of priority. Priority I and II problem sites are reclaimed first since they pose a threat to the public health and safety. Priority III problem sites that adversely affect the environment may be addressed simultaneously if they are located adjacent or are contiguous to priority I and II problems. Otherwise, stand-alone priority III features may not be reclaimed until all priority I and II sites have been reclaimed. P.L. 95-87 also provides that, at the request of the governor, certain Priority I non-coal reclamation projects may be undertaken on a case-by-case basis before the priorities related to past coal mining have been fulfilled. The Land Reclamation Program has been closing extremely dangerous non-coal mine shafts under this provision since 2001. The information pertaining to Missouri's abandoned mine lands is as existing site conditions change or new sites are identified.

On an annual basis, the unfunded high priority (Priority I and II) problem sites are ranked and selected for future reclamation work according to the severity of existing problems. To date, an estimated $174 million in Priority I, Priority II, and adjacent/contiguous Priority III AML problems have been inventoried in Missouri. Of this total, $105 million remain unfunded.

Missouri's Abandoned Mine Land Emergency Program

The Land Reclamation Program is responsible for investigating all AML emergency concerns in Missouri and conducting reclamation work when emergencies are declared. An AML emergency is a sudden event related to past coal mining that has a high probability of causing substantial harm. There also must be a need to abate the emergency situation more quickly than would be possible under normal AML program operations. Sometimes an emergency complaint constitutes an eligible coal mine problem, but the situation does not meet the emergency criteria. In this case, reclamation work could still be undertaken by the Land Reclamation Program under the normal AML program. The proposed reclamation project, however, would be subject to the project ranking and selection process and would have to compete for available grant funds along with other priority I and II problem sites.

During calendar years 2020 and 2021, no emergency projects were completed.

Abandoned Mine Land Featured Projects

Westminster Reclamation Project

The AML unit completed the Westminster Abandoned Mine Land Reclamation Project in December 2020. The project reclaimed a dangerous highwall located immediately adjacent to a residence and backfilled an associated water body. The highwall was approximately 300 feet long and 25 feet high and located within the city limits of Fulton, in Callaway County.

Other reclamation activities included: constructing an approximate one-acre pond, leveling six acres of spoil piles, diverting water runoff away from the Westminster baseball field, and revegetating the site with a mixture of warm-season grasses and forbs.

The project was awarded to Carl R. Jones Excavating and Hauling LLC, Fredericktown. Construction activities began June 15, 2020, and were deemed substantially complete Dec. 24, 2020. Final construction cost for reclamation was $238,516.45.

Contractor backfilling the highwall.

Hazardous water body along road will be partially backfilled and graded to gentle slope.

Reclaimed water body (edge of pit pushed back to safer distance from road).

Batschelett AML Reclamation Project

The AML unit completed the Batschelett Abandoned Mine Land Reclamation Project in the spring of 2020. The Batschelett Abandoned Mine Land Reclamation Project is located in the Franklin School (MO117) and in the Bear Creek (MO198) Problem Areas; approximately 3 miles east of Montrose, in Henry County. The sites of reclamation cover 25 acres on private property and are bordered by county roads CR SW 650, CR SW 851, and CR SW 951.

This project reclaimed 1,540 feet of dangerous highwalls and eight associated hazardous water bodies by the complete or partial backfill with spoil materials. The reclamation also eliminated 10 acres of dangerous piles and embankments.

The project was awarded to Cale Seymour Construction of Knob Noster. Construction activities started June 14, 2019, and were deemed substantially complete March 19, 2020, with a final cost of $216,381.17.

Old Bevier Phase III Reclamation Project

The Old Bevier Phase III Maintenance Project was completed in the spring of 2021. This maintenance project addressed a degraded acid mine drainage passive wetland treatment system located in the Old Bevier Problem Area (MO035) in Macon County on the Wooly Acres Training Area owned by the Missouri National Guard, approximately 3 miles northwest of Excello.

The project addressed the degraded capability of the passive treatment system to remove iron and acidity from the underground mine drainage and had been malfunctioning for several years due to clogged drain pipes and water short circuiting the treatment system. The contracts involved the removing and disposing of the collected iron waste, replacement of PVC pipes, limestone, and compost mix bedding, and installing improved flow control structures. Repairs were made to berms that were breached previously to prevent flooding.

The system reconstruction project was awarded to Carl R. Jones Excavating and Hauling LLC., Fredericktown. Construction activities began Nov. 17, 2020, and were deemed complete March 12, 2021, with a final contract cost of $110, 584.29.

Contractor excavating into drained cells to examine deposits.

Contractors installing drainage pipes in treatment cells.

New emergency spillway and primary discharge pipes are installed and cells are again filled with water.

Hazardous water body (11 feet deep) along NW 1301 county road.

Highwall and strip pit along state Route 52.

Reclaimed highwall and strip pit along state Route 52.

Reclaimed water body, pushed water line back 100 feet from road.

Tindall Farms Reclamation Project

The AML unit completed the Tindall Farms Abandoned Mine Land Reclamation Project in the winter of 2021. The site reclaimed 1,650 feet of dangerous highwalls with seven associated hazardous water bodies on private property by partial or complete backfill using onsite spoil material. The Tindall Farms Project was located on privately owned land 2 miles east of Appleton City, in St. Clair County. This project was comprised of 57 noncontiguous acres of abandoned coal mine lands that focused on reclaiming hazardous features along state Route 52 and county road NW 1301.

Two small dams were constructed with principal and emergency spillways to regulate the amount of water leaving the large strip pits in a large rain event. All grading and recontouring of the areas of disturbance were to achieve gentle slopes. The entire site was seeded with a diverse mix of cool-season grasses and legumes, with two areas being seeded with warm season grasses and legumes.

The project was awarded to Walter's Excavating LLC, located in Lowry City. Construction activities started Feb. 28, 2020, and were deemed substantially complete Jan. 13, 2021, with a final cost of $619,903.62.

Massa Breach Reclamation Project

The Massa Breach Abandoned Mine Land Reclamation Project was completed in the fall of 2021. The site reclaimed approximately 35 acres of abandoned coal mine lands on private property, approximately 5 miles northwest of the town of Liberal, in Barton County.

The project eliminated the health and safety concerns of one pit located immediately adjacent to county road NW 160th Lane, and mitigated iron contaminated water associated with a secondary pit that breached in the summer of 2019. Reclamation work included reconstructing the breached dam and backfilling the dangerous pit utilizing on site materials. The spoil heaps were recontoured to create gentle slopes that have been seeded with cool-season grasses and legumes to match the surrounding pasture.

The project was awarded to Double S Dirt Works Inc., located in Liberal. Construction activities began in May 2021, and were deemed complete Nov. 1, 2021, with a final cost of $319,825.75.

Water from a dam impoundment washes out the road where onlookers capture a picture of the breach that occurred.

Crews utilize on-site material to rebuild the dam and prepare the bottom of what will be a new lake.

Water level still rises after completion of the new dam. It will eventually reach the level of the green spillway pipe.

AML NON-COAL RECLAMATION PROJECTS

Overview and Projects

Although the Land Reclamation Program uses federal money designated to reclaim abandoned coal mines, the money may also be used to reclaim non-coal vertical mineshaft openings if they meet certain criteria. These non-coal problems are allowed to be corrected with a request from the Governor if it is necessary for the protection of the public health, safety, and general welfare from extreme danger, thereby meeting Priority I problem criteria.

Between Jan. 1, 2020 and Dec, 31, 2021, seven dangerous non-coal shafts were closed in the Joplin/Tri-State mining district. Two notable projects known as the 1736 W. 22nd Street Shaft Project and Ideal Lane Shaft Project were lead and zinc mine openings that suddenly developed. Reclamation of these shafts generally included excavating to bedrock or solid earth and constructing a steel-reinforced concrete plug over the open shaft. However, at 1736 W. 7th Street, the shaft opening was backfilled with flowable grout because the shaft was located near structures with no room for excavation.

Occasionally, a dangerous mine shaft may be closed by backfilling with rock, soil material, or backfilling with concrete to create a monolithic concrete plug. These closure methods are quick and relatively inexpensive, but often may not be the best choice. Most often a more costly, yet more permanent closure method is preferred. This more permanent closure consists of excavating the loose soil material around the hole down to the bedrock; constructing a platform; pouring a wedge-shaped, steel-reinforced, concrete plug at the top of the shaft; and backfilling over the concrete with earthen material. A closure of this type typically ranges from approximately $15,000 to $30,000 per shaft, but can vary based upon the specific conditions of each shaft.

Currently, there are no non-coal shafts in the inventory to address. However, it is suspected there are many more open shafts we are unaware of that will need to be closed. Dangerous mine shafts will continue to open (especially in the Tri-State Lead and Zinc Mining District, in the Joplin area) and will be investigated and closed to protect the public.

Missouri coal production declined from 4.2 million tons in 1987 to approximately 50 thousand tons by the end of fiscal year 2021. This decline is largely due to industry demands for low sulfur, western coal needed by power plants to reduce air pollution and meet emission standards required by the federal Clean Air Act. Most of Missouri's coal reserves contain relatively high sulfur content, ranging from 2-7% by weight. However, Missouri coal has a relatively high British Thermal Unit (BTU), compared to western coal. Some power plants and some cement kilns have opted to mix Missouri's coal with lower BTU western coal to increase energy production without exceeding sulfur emissions.

Ideal Lane Shaft Reclamation Project

The AML unit completed the Ideal Lane Shaft Emergency Abandoned Mine Lands Reclamation Project Dec. 16, 2020. The project entailed reclaiming a P1 lead/zinc vertical opening located at the intersection of Ideal Lane and County Road 300 in Carl Junction, in Jasper County. The feature was approximately 22 feet in diameter at the subsidence surface and it tapered to a 16-foot diameter shaft opening with a total depth of 50 feet. Depth to water in the abandoned shaft was approximated at 15 feet from the surface. Freddy Vans Inc. of Pittsburg, Kansas was contracted to abate the safety hazards at the site. Scope of work for the project began Dec. 2, 2020, with filling the existing shaft with 754 tons of limestone shot rock to a level just above water in the shaft. Next, 70 cubic yards of reinforced concrete were poured across the opening to sit on bedrock. Seven hundred eleven tons of clean fill was then placed above the concrete cap to an elevation of 1 foot below final contours. Lastly, 145 tons of topsoil was used to grade everything to drain, and the site was seeded. Total cost of reclamation for this project was $44,324.

Initial site investigation with shaft at intersection of County Road 300 and Ideal Lane near Carl Junction.

Reclamation is underway. Fill and reinforced concrete is being installed.

Post-reclamation seeding of Ideal Lane shaft deemed complete.

INDUSTRIAL MINERALS

Bill Zeaman, American Society of Mining and Reclamation, Reclamationist of the Year

Bill Zeaman, an environmental supervisor with the Missouri Department of Natural Resources, was named the 2020 "Reclamationist of the Year" by the American Society of Mining and Reclamation (ASMR).

Zeaman was selected for his outstanding accomplishments in the practical application and evaluation of reclamation technology and in implementing innovative practices and designs for new reclamation strategies.

"Our awards committee did an excellent job in selecting Bill Zeaman as the American Society of Mining and Reclamation's 2020 Reclamationist of the Year. We congratulate him for his extraordinary efforts in the field of reclamation," said Robert G. Darmody, Ph.D., ASMR Executive Director.

ASMR was organized in 1973 as a non-profit organization. Its purpose is to encourage and assist any agency, institution, organization or individual in efforts to reestablish, enhance or protect natural resources disturbed by mining or other human activities, or by disturbance through natural events.

"My thanks go out to ASMR and my colleagues. I have a sincere appreciation for those who helped me throughout my career and had confidence in me. All of these people mean a lot to me," said Zeaman, the Industrial and Metallic Minerals Mining unit supervisor in the department's Land Reclamation Program located in Jefferson City.

During his 24 years with the department, Zeaman has overseen and guided more than 250 mine operators to successful reclamation programs. Zeaman is a leader in reducing regulatory burdens to mining companies and streamlining regulatory processes. He was instrumental in the development and implementation of the online services and systems used by the mining community and the general public. One in particular benefits the mining community by helping them easily manage their mining permits online.

"We are very proud of Bill. This prestigious award is a direct result of his commitment to restoring former mine lands to beneficial use for future generations," said Carol Comer, director of the Missouri Department of Natural Resources. "What a testimony to Bill and our Land Reclamation Program for the service they provide to landowners, business, industry and the citizens of our state."

Land Reclamation Program colleagues Ashley Harrison, Grace Mobley and Mariah O'Brien authored the submission with input from co-workers. O'Brien, an ASMR member, submitted the nomination to the awards committee.

Zeaman will be honored at the ASMR annual 2022 meeting in Duluth, Minnesota.

The Land Reclamation Program has been providing valuable services to business, industry and the citizens of Missouri since the 1970s. Learn more online at ***dnr.mo.gov/land-geology/mining-land-reclamation.***

Public Participation

When applying for a new site, transferring an existing site, or applying for an expansion or revision, an operator is required to send a notice of intent to operate a surface mine. The operator is required to send the notice by certified mail to all first tier landowners, not related to the company within one-half mile of the mine plan boundary and to the governing body of the counties or cities where the proposed mine area is located.

The operator also is required to publish a public notice of intent in a newspaper that is qualified to run public notices and has general circulation in the county where the proposed mine is located. The public notice must be printed once a week for four consecutive weeks. The public notice requirement also allows the public an opportunity to provide comments or request a public meeting. The public comment period lasts for about 45 days. Operators are required to hold a public meeting if one is requested. Operators also are meeting with great success in holding their own version of a public meeting or "open house" neighborhood gatherings to discuss mine plans when proposing a new site.

Since Aug. 28, 2001, 117 public meetings have been held based on the 2001 edition of The Land Reclamation Act. Attendance figures at the public meeting ranged from one individual to a crowd of more than 100 people. One hundred nine public meetings resolved the concerns expressed by the public, thus eliminating most requests for hearings before the Administrative Hearing Commission. Public meetings provide a forum for the public to better understand or resolve issues related to a proposed mine site. They also provide a starting point for a company to reveal the proposed mine plan and provide responses to the public's concerns. Some of the topics covered at the public meetings involve impacts to air quality, water quality, permitting issues, blasting and livelihood issues. The communication at the meetings allows everyone the opportunity to share and understand the potential impacts a proposed surface mine may present.

Following a public meeting, the Land Reclamation Act at section 444.773.1, RSMo, requires the staff director to make a decision regarding the issuance or denial of an applicant's permit. The staff director's decision can be appealed to the Administrative Hearing Commission. If a hearing is held, the Administrative Hearing Commission would then make a recommendation to the Missouri Mining Commission. The decision of the Missouri Mining Commission is the final administrative appeal, which could then be appealed to the proper court of appeals.

The industrial minerals permitting program continues to look for ways to improve its methods of helping the public to understand the industrial minerals permitting procedures. During the 2020 and 2021 calendar year, citizens living near proposed mines requested 29 public meetings about proposed mine sites. This biennial reporting period experienced about a 30% increase in public meetings compared to previous years.

The Commission granted nine hearings since the 2001 edition of The Land Reclamation Act. Requests for hearings require a tremendous amount of staff time along with resources to address, and will become increasingly common as mining companies look to open sites near heavily populated areas. In seven of the cases, the operator was issued a certificate to operate a surface mine. One case involved the operator withdrawing their application. On May 23, 2013, the commission granted a hearing for AA Quarry's permit application. On June 17, 2013, Bart Tichenor was selected to serve as Hearing Officer. After multiple hearing dates in mid-2014, the commission issued a permit to engage in surface mining to AA Quarry Nov. 20, 2014.

Since the enactment of law (section 444.773, RSMo), from Aug. 28, 2014, to Dec. 31, 2021, 74 public meetings have been held and five hearings were requested through the Administrative Hearing Commission.

New sites and expansions to existing sites are needed in order to provide building commodities that meet the needs and demands of ongoing and new construction. It is likely that sometime in the future, changes may need to be implemented to associated statutes, rules or internal policies for the Land Reclamation Program to better respond to the needs of the environment, the unregulated community and companies that mine industrial minerals. One change made to the permitting process in 2020 is that certified mail letters now contain an additional statement that you can request a map of the proposed permit area by contacting the Missouri Department of Natural Resources, Land Reclamation Program.

Routinely, the concerns brought to public meetings involve issues outside the regulatory authority provided in The Land Reclamation Act. These issues include concerns about blasting, safety on public roads and the mine's effect on property values. The public meeting process has brought an acute awareness to the department about what is most troubling to the citizens. In return, the public has an opportunity to learn more about the reclamation requirements under The Land Reclamation Act. Continued contact will help pave the way for the citizens to resolve their concerns about mining.

Permitting

Industrial mineral mining permit certificates are issued for a one-year period. The industrial mineral permits must be continually renewed until the Missouri Mining Commission or staff director deems all mined land covered by the permit has been fully reclaimed.

Approximately 700 permit applications were issued in the past two years. Since some permits contain multiple sites, the number of permitted sites is substantially higher. In addition to the new and renewed permits, staff spent a considerable amount of time reviewing other permit actions, including permit transfers, expansions, amendments and consultations with the Missouri Department of Conservation. Fees collected from industrial mineral permits are used to conduct necessary regulatory functions.

A tremendous amount of time was spent in 2017 developing what is called the Land Reclamation Information System. This new system will allow an operator to electronically submit an application along with an electronic payment.

The Land Reclamation Information System (LRIS) went live Oct. 1, 2018. LRIS was developed to help the mining community apply for and receive Missouri Mining Industrial Mineral Permits.

Currently, LRIS can be used to apply for a new permit, as well as renewal, amendment, expansion and revision permits, and bond release requests for existing industrial mineral permits. In later phases, LRIS may be expanded to include transfer requests for industrial mineral permits and provide ability to submit annual reclamation status reports. Additionally, metallic minerals and coal permit

Con-Agg Companies, Boone Quarries, Millersburg Quarry #1, Open Pit Limestone Mine, Callaway County.

information may be added to LRIS with permitting ability to be determined. Metric data as of Jan. 5, 2022, indicates that nearly 38% of all the permitted companies are using LRIS representing more than 54% of all the industrial mineral permitted sites.

Learn more about LRIS online at **dnr.mo.gov/land-geology/businesses-landowners-permittees/permits/industrial-mineral/land-reclamation-information-system-lris**.

Inspections

Prior to 2007, the state was separated into at least four geographic area inspection units. Now, the state is divided into two geographic area inspection units with at least two inspectors assigned to each unit. Each unit contains about 57 counties. Not all counties have an industrial mineral mine site. When staff wanted the state divided into two regions, it was noted that some areas became more active at times, when compared to others. Before the change, one staff member had to investigate a lot of complaints in the southwest portion of the state while inspection staff assigned to the northeast portion of the state had a relatively normal schedule. Now, at least two inspection staff members share an assigned area to help maintain a relatively normal workload.

Operators who have been in the business for more than five years have undoubtedly seen changes in inspection staff. Many operators prefer the same inspector each year for the purpose of consistency. The program will accommodate their request as often as possible.

Inspectors are limited to the amount of on-site inspections they can perform in a given year, as they conduct permitting and other actions as well. Mine operations range in size from one-acre gravel bars to some sites being greater than 300 acres such as limestone quarries. In 2021, there were 781 permitted industrial mineral sites, and 482 inspections were conducted. In 2020, there were 687 permitted mine sites, and 291 inspections were conducted. Inspection staff attained a compliance rate of almost 100% when working with the operator through conference, conciliation and persuasion. Inspection numbers were down in 2020 due to COVID-19. Staff worked diligently in 2021 to get inspection numbers back on a better than average track. Otherwise, these total numbers are consistent in average when compared to the number of inspections conducted during the past few years. This similar rate of inspection numbers are related to:

- **Longer employee retention time.**
- **Increased efficiency for producing inspection reports.**
- **Fewer turnovers in inspection staff.**

The Industrial Minerals unit projects to maintain a total of 400 inspections per year in years to come, as long as the unit retains inspection staff and certified inspectors to conduct investigations. Each of the four inspectors conducts about 100 inspections. Conducting inspections at this rate will mean sites will be inspected once every two years. This is a huge improvement when compared to the last 15 years.

Types of Inspections

In 2020 and 2021, an average of 386 site inspections were conducted. Inspections typically fit into three categories:

- **Regular Inspections.**
- **Citizen Concern Inspections.**
- **Bond Release and Other Inspections.**

Regular Inspections

Regular Open Pit inspections are conducted to determine if an operator is in compliance with the approved permit and the applicable performance requirements. Performance requirements checked by inspectors include timeliness of reclamation, safety barriers, lateral support, erosion and siltation control, grading, topsoil handling, and revegetation. Inspectors also evaluate each mine site to ensure all mining disturbance is confined to the permitted and bonded area and the approved post-mining land uses are being established.

In-stream sand and gravel inspections now involve performance standards. Inspectors evaluate the mined area on the gravel bar to ensure the material being excavated is unconsolidated. Inspectors also look to ensure there is no mining below the waterline, no relocation of stream channels, no sorting or washing of gravel on the gravel bar, and an undisturbed buffer of 10 feet exists from the flowing water.

Citizen Concern Inspections

Concern inspections are conducted after the program receives notification that an industrial mineral operation may be in violation of The Land Reclamation Act. Concerns filed may involve blasting, noise, truck traffic, water pollution, digging in flowing water, pumping turbid water from a pit, erosion or siltation. Following an investigation, the inspector and operator often are successful in resolving a citizen's complaint in a timely manner. However, many concerns related to mining operations, such as blasting and noise, are not regulated by the Land Reclamation Program and are referred to the appropriate regulatory authority.

However, the department requires a concern be investigated within 30 days. The goal is to respond within 14 days of receiving a concern, however, an investigation usually is conducted within seven work days. There were 17 concerns filed and investigated in 2020, and 22 concerns filed and investigated in 2021.

Small dam in creek diverting water flow, Stone County.

Bond Release and Other Inspections

Bond and reclamation responsibility release is an important part of the mine closure process. Bond release inspections are conducted at the operator's request when reclamation has been completed. The mining company also will send the landowner a letter announcing the intent to seek a release of the mined land. The landowner may request a hearing before the Missouri Mining Commission if they feel the land is not properly reclaimed and likewise if the bond release application is denied, the operator may request a hearing.

LafargeHolcim, Clarksville Quarry (34 acres with wildlife), Pike County.

The focus of the bond release inspection is to determine if the mine site has been reclaimed in accordance with the reclamation plan. The inspector must evaluate if the operator has established the designated post mining land uses. Post mining land uses may be designated as wildlife habitat, agricultural, development or water impoundment. At least two growing seasons must pass after an area has been planted before the success of revegetation can be judged. Land never affected by mining that is under permit and bond may be released as unaffected.

The staff director determines if the bond, or any portion thereof, should be released. When mined land is properly reclaimed, a request for approval for bond release is made to the Missouri Mining Commission or staff director. If either the Missouri Mining Commission or staff director approves the request for approval of reclaimed land, the reclamation performance bond is released back to the operator. The commission or staff director approved the release of 274 acres of reclaimed mine land in 2020 and 784 acres in 2021.

To obtain a "Request for Approval of Reclaimed Land" form, visit the department's website at **dnr.mo.gov/document-search/request-approval-reclaimed-land-mo-780-0946** or contact the Land Reclamation Program by telephone at 573-751-4041.

The department and programs also are conducting environmental assistance visits for new operators. Typically, the Land Reclamation Program allows an operator to conduct operations for a few months before conducting an initial inspection. Inspectors typically let a new operator conduct operations for a two-month period and then see what changes the operator may need to make to stay in compliance with applicable mining laws. Assistance visits are another type of inspection. If an operator requests an inspection to see how to mine in accordance with the mining laws, an inspector will provide that type of assistance inspection. Since 2007, staff annually inspect every site that is within the watershed of Outstanding State Resource Waters or Outstanding National Resource Waters.

Enforcement

Enforcement powers of the Missouri Mining Commission were enhanced in two significant ways by revisions made in 1990 to The Land Reclamation Act. The commission may impose administrative penalties when notices of violation are issued, and they have the option to refer civil actions to the Cole County Court rather than the county in which the violation occurred. These revisions have resulted in more prompt and vigorous action by the operators to eliminate violations. Often, violations observed during an inspection are eliminated through the use of conference, conciliation, and persuasion.

This process encourages the operator to correct a noncompliance through voluntary action and is used normally in cases of relatively minor noncompliance. If attempts to correct a violation through conference, conciliation and persuasion are not successful, a notice of violation is issued to the operator.

Mining below waterline and placing fill to create a road, Morgan County.

Seventeen notices of violation were issued during 2020 and 2021. Eleven violations were administrative in nature, six violations involved performance standard requirements. Administrative violations involved failure to renew or obtain a permit. The performance standard violations involved failure to maintain adequate buffers from the high bank and flowing water line modifying the stream channel, removal of woody vegetation greater than an inch and a half diameter measured four and a half feet off the ground, mining below the waterline and stockpiling gravel on the gravel bar. One operator received seven of the issued violations and has since come back into compliance. An increase in the number of site inspections at industrial minerals operations typically carries the potential for an increase in enforcement activity during a specific time frame. Since the Land Reclamation Program started conducting environmental assistance visits, the department has noticed mining operators are now more informed about the law and regulations and are less likely to be in a violation situation. Potential enforcement actions are avoided or minimized through close coordination with Land Reclamation Program staff.

Hearings

During 2020 and 2021, two Industrial Minerals permit application hearings were requested to the Administrative Hearing Commission.

Meramec Aggregates Inc.

On Oct. 30, 2020, the department's Land Reclamation Program received from Meramec Aggregates Inc., a permit expansion application to add a new mine site named Bruns Open Pit in Franklin County. This open pit sand and gravel mine site is located near St. Clair. A public meeting was held Jan. 12, 2021, as part of the public notice process. About 15 people attended the public meeting held via a virtual meeting format.

Having reviewed and considered the administrative record related to the permit expansion application, including public comments and compliance history, the staff director made a decision to issue the permit on Feb. 23, 2021, pursuant to section 444.773, RSMo of The Land Reclamation Act.

This decision was appealed to the Administrative Hearing Commission as provided by section 621.250.3, RSMo.

This permit expansion application for a new site is to mine on an additional 35 acres of land with an operation end date of mining Dec. 1, 2070. The reclamation plan is to have a 25-acre water impoundment surrounded by 10 acres of wildlife. This site is located in the Meramec River flood plain, the site was a near level farm field that grew soy beans, corn and hay. No mining would take place in the 100-year floodplain. No processing of the sand and gravel would take place at the mine site; rather the mined material would be hauled by Meramec Aggregate trucks to the current processing area on Highway 30.

Petitioners for the hearing asserted historical mines in the area mined copper, lead and zinc. The

Meramec Aggregates Inc., Bruns Open Pit site (35-acres) prior to mining.

contamination from these historical mines could be present at the proposed new site and wanted further follow up investigations. No historical mining was detected at the Bruns Open Pit mine site, the closest historical mine is located 1,072 feet from the site. Land Reclamation Program staff did consult with Super Fund personnel and the Environmental Protection Agency to see if further sampling should be done. Most lead contamination is a result of processing of lead (where the waste is placed, along haul roads and in smelter drifts), processing of leaded fuel, and the manufacture of lead-acid batteries. No lead testing was conducted at the site.

A hearing was held May 10, 2021, utilizing a virtual hearing court setting. Meramec Aggregates represented by Eclelkamp Kuenzel LLP appeared, along with Timothy Plassmeyer representing himself. The department was represented by the Attorney General's Office. The hearing was scheduled for eight hours. Hearing Commissioner Phillip Prewitt started the hearing at 9 a.m. Everyone present at the hearing provided testimony to the Hearing Commissioner. Plassmeyer presented no evidence, scientific or otherwise that his health or safety would be impaired because of chemicals or lead by the issuance of the expanded mining permit to Meramec Aggregates.

On July 2, 2021, Hearing Commissioner Philip Prewitt wrote in summary, "We recommend that the Missouri Mining Commission uphold the expanded permit issued to Meramec Aggregates to engage in the surface mining of sand and gravel at the Bruns Open Pit." On July 22, 2021, the Missouri Mining Commission unanimously voted to support the Administrative Hearing Commission's recommendation.

Twin States Sand and Gravel

On Aug. 25, 2020, the department's Land Reclamation Program received from Twin States Sand and Gravel LLC, a new permit application to mine limestone at a site named Reger Quarry in Sullivan County. This open pit limestone mine site is located near Milan. A public meeting was held Dec. 9, 2020, as part of the public notice process. About 23 people attended the public meeting held at the Milan Community Center.

Having reviewed and considered the administrative record related to the new permit application, including public comments and compliance history, the staff director made a decision to issue the permit Jan. 15, 2021, pursuant to section 444.773, RSMo of The Land Reclamation Act.

This decision was appealed to the Administrative Hearing Commission as provided by section 621.250.3, RSMo.

This new site permit application is to mine on 22 acres of land with an operation end date of mining effective Jan. 1, 2050. The reclamation plan is to have a 4-acre water impoundment surrounded by 18 acres of wildlife. This site is located on three sides of Henry Cemetery. The site has gently rolling hills, an oak and hickory forest along with brush. No processing of the limestone would take place at the mine site. The mined material would be hauled across the road at Highway Z by Twin States Sand and Gravel trucks to the current processing area at the prelaw quarry.

Petitioners for the hearing asserted the proposed mine site borders three sides of Henry Cemetery, which is a recognized national historic cemetery. People visiting the cemetery to pay respect to loved ones or maintenance workers could be harmed by the mining operation due to blasting or noise of the operation. Concerns were expressed about potential air, water and soil contamination, and for people traveling on Route Z due to haul trucks crossing the road and grading near the road. A geologist's report cited fly rock concerns, surface water runoff contamination, noise of the operation being intrusive, setbacks, safety barriers, along with disruption of flow of a spring located on the property.

A hearing was held April 29, 2021, utilizing a virtual hearing court setting. Twin States Sand and Gravel did not attend the hearing. Petitioner Glenda Richey was represented by Swearengen & England P.C. The department was represented by the Attorney General's Office. The hearing was scheduled for eight hours. Hearing Commissioner Renee T. Slusher started the hearing at 9 a.m. Everyone present at the hearing provided testimony to the Hearing Commissioner. All parties provided their detailed evidence.

On June 11, 2021, Hearing Commissioner Renee T. Slusher wrote in summary, "We recommend that the Missouri Mining Commission over rule the Department's issuance of Twin States' permit because we lack additional evidence to provide a recommended solution to the known risk." On July 22, 2021, the Missouri Mining Commission heard the case during their commission meeting and tabled the item. This item was removed from the table during the Aug. 3, 2021, Missouri Mining Commission meeting and unanimously voted to overrule the department's issuance of the Twin States' permit application because the permit application did not meet regulatory public notice requirements.

Bonding

Open-pit sand and gravel operations mining 5,000 tons or less per year are bonded at a rate of $500 per acre before a permit is issued. For all other operations, the minimum bond required on eight acres or less is $8,000 and $500 for every acre permitted thereafter. The rules allow for a $4,500 per acre topsoil bond when there is a failure to salvage topsoil for those acres. Typically, in-stream sites are not subject to bonding requirements due to the lack of reclamation responsibility. However, upon inspection, if an in-stream site is determined to have created a reclamation responsibility, bonding requirements of $500 per acre will be imposed.

The state will use the bond to complete reclamation if the permittee, for whatever reason, is unable or unwilling to fulfill the legal obligation to reclaim the disturbance to the land surface they caused. An operator may secure bond through a surety bond, certificate of deposit, or an irrevocable letter of credit. All bonds must be submitted on forms provided by the Land Reclamation Program.

If an operator elects to use a certificate of deposit to secure bond, the certificate of deposit must be accompanied by a "Personal Bond Secured by a Certificate of Deposit" form. The certificate of deposit must also be assigned to the state of Missouri and the issuing bank must acknowledge this action using an Assignment of Certificate of Deposit. The assignment must be irrevocable and conditioned on the release of the bond by the Missouri Mining Commission. The interest earned on a certificate of deposit must be made payable to the depositor.

Applicants who wish to increase the number of acres under permit must post additional bond. A surety bond may be increased through a rider with an attached power of attorney. Bonds may be replaced, dollar for dollar, at any time. The old bond cannot be returned until the replacement bond has been submitted and accepted by the Land Reclamation Program staff director. At the end of 2021, there is record of approximately $18,000,000 in financial assurance held by the state of Missouri.

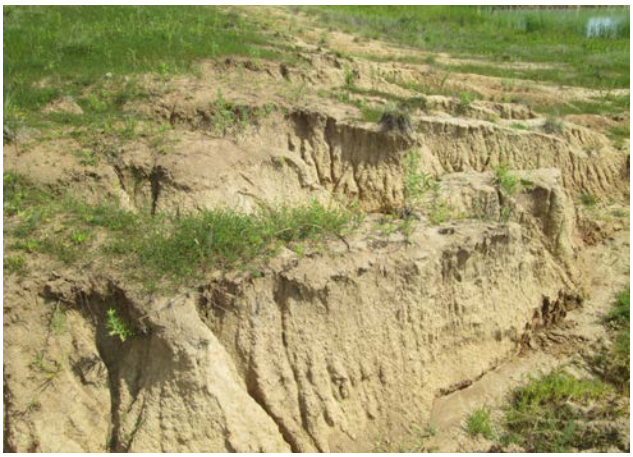
Bond Forfeiture

The Land Reclamation Act went into effect Jan. 1, 1972, and it permitted and regulated the mining of limestone, clay, barite, tar sands, sand and gravel in Missouri. As part of regulation, the companies and individuals participating were obligated to put up a reclamation performance bond in the amount of $500 per acre for every permitted acre. If an individual or company fails to perform the required reclamation, the bonds would then be forfeited and the state would complete the reclamation. An operator who forfeits the bond may not be issued another permit to engage in surface mining from the Missouri Mining Commission in accordance with section 444.778.2, RSMo.

The bonding amount was subsequently found to be inadequate to cover reclamation costs, and there were additional inadequacies in the act. Therefore, the act was amended effective Aug. 28, 1990. The amendment added granite, traprock, sandstone, oil shale and shale to those already regulated, and it increased the reclamation bonding to a minimum bond of $8,000 for the first eight acres and $500 for every acre permitted thereafter. Between 1972 and 1990, 26 sites operated by 14 different companies became bond forfeiture sites and proper reclamation became the responsibility of the Land Reclamation Program.

In 2003, National Refractories left reclamation responsibilities to the state when they went bankrupt. Due to negotiations with the surety company, a settlement was not reached until October 2006. The surety provided $85,250 in bond monies to reclaim 25 clay pits for a total of 162.5 acres. After an initial inspection, the Land Reclamation Program quickly learned there was not enough bond money to properly reclaim the sites in accordance with The Land Reclamation Act. Two sites in particular have a cost estimate of $200,000 for proper reclamation. The program continues to work with landowners to reclaim these sites. No mining companies left a reclamation responsibility to the state in 2006 or 2007. In 2008 and 2009, a total of 93 acres were forfeited involving two limestone and two sand and gravel mining operations. In 2010 and 2011, no bonds were forfeited. In 2012 and 2013, two clay mine sites for a total of 43 acres were forfeited along with an 8-acre limestone site. In 2014 and 2015, forfeiture of the White Rock Quarry, in Lincoln County, consisting of 41 bonded acres, took place. In 2016, 2017, 2018 and 2019 no bonds were forfeited. There were no bond forfeitures in 2020. In 2021, two sand mining companies, Legacy Quartz Sand Company LLC and Summit Proppants Inc., left a reclamation responsibility of 48 acres for the state to reclaim.

Reclamation of the Mid-America Brick and Structural Clay Products, Site #1, whose bond was forfeited in 2013, began in August 2021. The landowner is completing the reclamation of the clay pit under a contract with Land Reclamation Program. The first part of the contract was to backfill and grade the pit area, which was completed in October 2021. The remaining part of the contract is to replace topsoil and get vegetation established sufficient enough to control erosion.



Mid-America Brick and Structural Clay Products, Site 1, erosion and pond prior to reclamation, Audrain County.

Mid-America Brick and Structural Clay Products, Site 1, grading and pond back filled, Audrain County.

In-Stream Sand and Gravel Mining

In-stream sand and gravel mining is one of the most prevalent types of mining in Missouri, as far as the number of sites. This type of mining method does not allow excavating machinery in the flowing portion of the stream. It is a bar skimming mining operation.

Bar skimming is limited to the exposed portion of the gravel bar above the water line, between the ordinary high banks of a stream. Bar skimming is recommended as a means for advancing stream resource conservation while maintaining a viable extraction industry. This type of gravel removal operation lowers the risk of forward erosion of the stream channel upstream and sedimentation downstream. In addition, the practice of removing gravel at periods of low water flow will aid in protecting wildlife near the stream environment. Some of the new rules include, staying an adequate distance from the stream bank, use of existing crossing areas, leaving an undisturbed buffer of 10 feet from the flowing water line, and no mining below the water line unless the operator has applied for and received a variance.

In 2021, the program permitted 198 in-stream sites. Numerous operators across the state excavate sand and gravel deposits, commonly known as gravel bars, as a source of aggregate material.

During the 1990s, in-stream sand and gravel mining underwent several changes in regulatory control within Missouri. In the early 1990s, the Land Reclamation Program was the permitting and enforcement authority that both issued permits for this type of mining activity, and oversaw the proper removal of sand and gravel from Missouri's streams. In the mid-1990s, the regulation of this activity was taken up by the U.S. Army Corps of Engineers (USACE) who took over the entire process of permitting and inspecting these mining

Stallcup Stone LLC, Beaver Creek, Taney County.

West Investments, Crooked Creek, Crawford County.

facilities. USACE lost jurisdiction over this activity in late 1998 due to a ruling by the U.S. District Court of Appeals. The court found that "de minimus" or incidental fall back of sand and gravel into the stream from which it was being excavated did not constitute the placement of fill by the mining operation. Hence, the court ruled the USACE had exceeded its authority in requiring a permit for this activity.

In January 1999, the Land Reclamation Program resumed the former position of the regulatory authority over this type of mining activity and bases this authority upon the provision of the state's Land Reclamation

Act. Approximately 150 permits were reissued to the mining industry during the early months of 1999 by the Land Reclamation Program to take the place of the existing USACE permits. This responsibility continues to the present day on the part of the Land Reclamation Program.

Spotlight on the Ozarks: Sand and Gravel Mining

Sand and gravel mining operators in the Ozarks face challenges operators in other regions of Missouri do not experience. The greatest regulatory challenge for sand and gravel operators is conducting mining and processing operations within the watershed of Outstanding National Resource Waters or Outstanding State Resource Waters. Outstanding resource waters are defined by the department's Water Protection Program as state or national waters:

- **Outstanding state resource waters are high quality waters with a significant aesthetic, recreational or scientific value, specifically designated as such by the Clean Water Commission.**
- **Outstanding national resource waters are waters that have outstanding national recreational and ecological significance. These waters must receive special protection against any degradation in quality. Congressionally designated rivers, including those in the Ozark National Scenic Riverways and the wild and scenic rivers system, are so designated. The three rivers that fall under this jurisdiction are Eleven Point, Jacks Fork and Current.**

The Ozarks counties of Phelps, Crawford, Dent, Shannon, Reynolds, Texas, Carter, Douglas and Howell contain a majority of the either State or National Outstanding Resource Waters. Some smaller designated areas are present in a few other counties in Missouri. In-stream sand and gravel operations are prohibited from those waters listed as Outstanding National Resource Waters. Clean water laws require mining operations in watersheds within National Outstanding Resource Waters to have a no discharge system. Discharges at sites in Outstanding State Resource Watersheds must not cause the current water quality in the streams to be lowered. Because of this regulation, the Land Reclamation Program issues a letter to operators in these watersheds advising them of six extra conditions, along with a certificate to operate a surface mine. Five of the conditions are applicable to all other operators as part of their standard sand and gravel excavation plan. The one condition not required of all other operators is the mined gravel bar be left nearly level at the end of the day. This is accomplished by back dragging any ledge or ridge created by the excavation. Most operators already do this and it does not present a financial burden to their operation. The mine site is not the only portion of the operation subject to the Water Protection Program's no discharge requirements.

A no discharge system also is required for washing and other processing areas along with all other types of businesses that operate in watershed within an Outstanding Resource area. It is possible to operate a no discharge sand and gravel wash plant. Spring Creek Materials currently operates mine sites and washplants in compliance with the no discharge requirements. Owner Travis Morrison reports the only other alternative is to have sand and gravel shipped in from more than 150 miles away from the Missouri

River. Shipping doubles the price of that material for every 35 miles of travel. In this case, sand could cost up to $85 per ton, which is not a viable option as it would be reflected in construction costs. Currently, adequate supplies of sand and gravel exist to meet growth demands in the watersheds within the Outstanding State Resource Waters in the Ozarks, as this region is not experiencing the economic growth demands when compared to Branson, St. Louis or Kansas City.

Mining and economic development projects in the watersheds within the Outstanding State Resource Waters are subject to either no discharge requirements or must not cause the current water quality in the streams to be lowered. These mine sites or development projects are no different than others. However, the water protection standards have stricter requirements compared to other portions of the state. Operators in the Ozarks want universal and fair treatment for all mine operators in the state. Operators inform the department to keep in mind the impacts the water quality standards have on economic development as these decisions affect day-to-day operations. Operators in the Ozarks are managing their business on a thin line and believe extra conditions imposed on their operation are unfair circumstances. There are a number of websites that provide free aerial photographs, allowing operators to locate isolated gravel bars.

METALLIC MINERALS

Teck American Incorporated, Magmont Mine, American Society of Reclamation Sciences Distinction in Reclamation, National Award Winner

The Missouri Department of Natural Resources nominated Teck American Incorporated for the American Society of Reclamation Sciences 2021 "Distinction in Reclamation" award. This award recognizes a specific project in which a company has demonstrated excellence in reclamation design, implementation, and overall success, resulting in the conservation of natural resources and the ecosystem.

Teck's Magmont Mine, located in Reynolds County, won because they remained in compliance, welcomed and implemented suggestions made by the department and utilized innovative mining techniques and high-quality reclamation activities. The award will be presented to Dave Enos, manager of dormant properties for Teck American Incorporated, in June, 2022, in Duluth, Minnesota. On Dec. 27, 2017, Carol Comer, director of the Department of Natural Resources, released 318 acres of the 371-acre bonded area under the Metallic Minerals Waste Management Act.

Teck consistently exceeded the spirit and intent of the law in regard to closure and reclamation at Magmont Mine. Production of lead, zinc and copper concentrates began at the mine site in 1968 and reclamation activities started before cessation of mining May 26, 1994.

Revegetation activities on the Magmont tailings area began in 1992 with an innovative pilot planting on a 30-acre test plot. The pilot planting was performed to evaluate the capability of native grasses to grow on cover material, and to inform reclamation planners about erosion and soil conditioning needs. "Teck has been conducting reclamation monitoring and maintenance in close coordination with the department since 1996," said Larry Lehman, Land Reclamation Program director with the department's Missouri Geological Survey. Groundwater monitoring has been conducted from 1991 to present.

The site met the revegetation success criteria of greater than 80% coverage in 2006 and exceeds 90% today.

"Teck American Incorporated has a long history of working alongside the Land Reclamation Program and other DNR agency staff from our operation of the Magmont Mine in the Viburnum Trend. In the early 1990s when we started mine reclamation, DNR helped us create our post-mining vision of reclaiming the land to benefit native wildlife. As we completed our reclamation in the 2000s, Land Reclamation Program staff guided us toward compliance with the various DNR programs. The process was rigorous, as it should be, but never frustrating as environmental programs can sometimes be," said Enos. "My personal experience has been extremely positive. Bill Zeaman, Ashley Harrison, her predecessor Beth Aubuchon and others have encouraged us to set mutually-beneficial site reclamation goals, and we have worked collaboratively as we took the steps needed to obtain those goals."

The department works closely with Teck and others to ensure mined Lands are returned to beneficial use. Learn more about Teck's award online at ***asrs.us/society-awards/***.

Read about Teck by visiting their website at ***teck.com***. A video about Magmont Mine and other reclamation projects in Missouri is online at ***youtu.be/sWZjs_LWUXs***.

The Doe Run Company, Buick Mine, Iron and Reynolds counties.

Introduction and Purpose

The Metallic Minerals Waste Management Act, enacted into law in 1989, gives regulatory authority to the director of the department to have and exercise all powers provided in sections 444.352 to 444.380, RSMo of this act. The Metallic Minerals Waste Management Act regulates disposal of waste from metallic minerals mining, beneficiation and processing. Some of the staff director's duties are to secure appropriate staff, coordinate existing environmental programs, issue permits, conduct inspections, manage fees, maintain records of management practices, seek additional funds, publish rules and pursue appropriate enforcement actions. The minerals covered by the Metallic Minerals Waste Management Act are those minerals or ores containing lead, iron, zinc, copper, gold and silver. After Aug. 28, 1989, active metallic minerals waste management areas operating under a National Pollutant Discharge Elimination System permit, or dam safety registration, or both, were required to submit a Metallic Minerals Waste Management Permit within six months, or within 90 days after filing an application for a National Pollutant Discharge Elimination System

construction permit or dam safety construction permit, whichever is applied for first. The operator applied to the staff director for a metallic minerals waste management area permit. Today, operator applications contain but are not limited to a schedule and plan for closure and inspection-maintenance of the waste management area. Operators will implement the plan when the useful operating life of the waste management area is complete or when there is permanent cessation of the operation.

Permitting

Missouri Cobalt, tailings basin prior to receiving tailings, Madison County.

In 1991, the department issued 11 permits to operators under The Metallic Minerals Waste Management Act. During 2001 and 2002, the Land Reclamation Program continued the five-year review of the metallic minerals waste management permits. In 2002, the only underground iron ore producer, the Pea Ridge Iron Ore Company transferred their 180-acre permit area to an entity by the name of Upland Wings Inc. Upland Wings was bought out by Pea Ridge Resources in 2011. Pea Ridge Resources is conducting studies to determine if mining will resume. Additionally, the tailings at Pea Ridge are being studied for recovery of magnetite and rare earth elements. In December 2017, the Pea Ridge Iron Ore Mine went through a series of court judgments and a receiver has ownership of the mine. Mr. Jim Kennedy is working through the court system to regain ownership of the Pea Ridge Iron Ore Mine. The court proceedings will became final in 2021, and Mr. Kennedy plans to start mining tailings out of the impoundment.

Metallic Minerals Waste Management permit applications consist of financial assurance information and detailed waste management area closure and inspection-maintenance plans. The plans establish and explain the technical steps proposed to accomplish and maintain closure after mining and waste disposal is completed. Issues addressed in the plans include the following:

- **The design and construction of waste control structures and tailings dams.**
- **The characterization of waste products.**
- **The methods for control and protection of surface water.**
- **The methods for protection of ground water and aquifers.**
- **The geology and seismicity of the area.**
- **The potential of subsidence.**
- **The reuse and off-site removal of wastes.**
- **The surface reclamation of waste management areas.**

During the ongoing permit application review and five-year review of the closure and inspection- maintenance plans, Land Reclamation Program staff coordinate permitting with the other programs within the department involved with the metallic minerals waste management areas. They include Missouri Geological Survey's Geological Survey Program, Dam and Reservoir Safety Program and Environmental Quality Division's Air Pollution Control Program, Waste Management Program, and the Water Protection Program. This coordination process affords other program

staff to review and comment on the technical aspects of the plans so all of the department's issues may be incorporated into the permit.

The Land Reclamation Program was involved with the department-wide inspection and surveillance activities performed at The Doe Run Company's Herculaneum smelter. In May 2001, the department, Environmental Protection Agency and The Doe Run Company signed a voluntary administrative order on consent. The order requires the company to conduct certain response actions to abate an imminent and substantial endangerment to the public health, welfare and environment.

The Land Reclamation Program has been monitoring the construction of a containment berm around the perimeter of the current slag pile, which was required in the order. Construction of the berm has been underway since spring 2007. The Herculaneum smelter closed Dec. 31, 2013, and no longer will produce slag.

The Land Reclamation Program is working with Missouri Cobalt through conference, conciliation and persuasion to obtain a Metallic Minerals Waste Management Permit. This mine is located near Fredericktown and is mining the tailings left over from previous processing of copper, nickel, iron, zinc and cobalt ore. Mining and processing of the tailings started in 2019. There are plans to dewater and reopen the underground mine. A Metallic Minerals Waste Management Act permit was submitted to the department April 13, 2021. Since the application submittal, the Land Reclamation Program coordinated with all applicable media within the department and U.S. Environmental Protection Agency. This permit application, along with the closure and inspection/maintenance plans are being finalized for the first new Metallic Minerals Waste Management Act permit to be issued by the department since 1991.

Inspections

Typically, inspections are performed semi-annually on the 10 metallic minerals waste management permit areas within Missouri. During the course of these inspections, all aspects of each company's permits are evaluated. The main focus of these inspections is to assess the company's compliance with virtually every environmental law administered by the department. The Land Reclamation Program is entrusted as the coordinating agency within the department for each active metallic mineral producer currently operating in Missouri. It is the program's responsibility to act as the liaison for the other programs within the department and each metal producer to ensure continuing compliance with all applicable state environmental laws.

Actual on-the-ground reclamation does not begin at these sites until mineral production ceases, and mine closure begins.

During 2001 and 2002, three more facilities ceased production. The Doe Run Company's Viburnum mine and Buick primary smelter also ceased production. The Doe Run Company's Glover smelter has received approval from the department for closure of the Doe Run slag pile and the ASARCO Slag Pile. The closure and inspection/maintenance plans for these mines and smelters are either being reviewed by the department at this time or the department is waiting for the submission of revised closure plans for review and approval.

Asarco Inc. owned the facility from the 1960s until 1998 and began conducting investigation and cleanup of contamination from past smelter operations pursuant to a Sept. 6, 1994, Consent Decree filed in Iron County Circuit Court. Asarco was performing site-wide corrective action under the Consent Decree until

2004 when those activities ceased due to Asarco's financial condition. Asarco filed for Chapter 11 bankruptcy in 2005.

Asarco Inc., Glover slag pile was reclaimed and blends in with the hillside, Iron County.

As part of the Asarco bankruptcy proceedings, the department's Hazardous Waste Program worked with the Missouri Attorney General's Office to evaluate information on potential remedial options and related costs resulting from releases to the environment attributable to Asarco. A report titled, Former Asarco Smelter, Glover, Missouri, Expert's Preliminary Opinion Concerning Remediation Costs, July 26, 2007, was prepared by department staff in support of bankruptcy mediation proceedings conducted in early September 2007, in Kansas City, Missouri. These proceedings spawned discussions between the department, Attorney General's Office, and The Doe Run Company regarding application of any funds received by the state of Missouri through the Asarco bankruptcy process. These discussions led to the development of a voluntary agreement (the Glover Site Project Trust Agreement) between the department and The Doe Run Company, which was executed Sept. 7, 2011. This agreement is designed to allow The Doe Run Company to utilize the funds recovered from the bankruptcy proceedings to perform work that would otherwise have been required of Asarco under the 1994 Consent Decree. The summary judgment dated Nov. 11, 2013, ordered allocation of the bankruptcy claim to be disbursed to the Missouri Hazardous Waste Fund and to the Trustee of the Glover Site Project Trust.

Funds deposited in the Missouri Hazardous Waste Fund are used to cover the department's ongoing oversight costs including document review and approval, site visits and inspections. Funds from the Glover Site Project Trust are being used for the design, consolidation and closure of the former Asarco slag pile, development and implementation of the Phase I Remedy Investigation Work Plan, development and implementation of interim corrective measures, and a Corrective Measures Study. Ultimately, funds will be used for remedy implementation and long-term remedy operation, maintenance, and monitoring as part of the department's oversight.

Reclamation efforts at the Glover Facility represents years of efforts from the department, Attorney General's Office, and court proceedings. Jones Railroad Repair was awarded the contract to reclaim the Glover Slag Pile. Reclamation on the Asarco Glover slag pile is now complete and blends in well with the surrounding hill sides.

Enforcement

To date, four enforcement actions under the provisions of the MMWMA have been necessary by the Land Reclamation Program. Enforcement actions were at two smelters and two mines. These actions included violations for construction of a waste management control structure prior to department approval, the failure of two facilities to contain metallic mineral wastes within their approved waste management areas, and the failure of a now bankrupt facility for failure to submit annual permit fees.

Enforcement under this law is significantly different from enforcement under either the coal or industrial minerals units of the program. When it becomes necessary to issue a citation to any of the metal producers, the authority to do so rests solely with the director of the department. Enforcement is authorized by law only after attempts to eliminate the violation through conference, conciliation and persuasion have been exercised and exhausted. In 2010 and 2011, the department and Attorney General's legal staff worked with Doe Run in negotiation settlement concerning The Doe Run Company's Sweetwater Mine. These negotiations produced an enhanced environmental protection plan that goes above the requirements in The Metallic Minerals Waste Management Act.

Bonding

Under The Metallic Minerals Waste Management Act, section 444.368, RSMo, before a permit can be issued, the operator must file a demonstration of financial assurance in the form of a bond, certificate of deposit, company guarantee, escrow agreement or other form of financial assurance as approved by the staff director. Any financial assurance instrument must be in such form as the director prescribes, to the benefit of the state of Missouri, conditioned that the operator must faithfully perform all terms of the permit and the requirements of sections 444.352 to 444.380, RSMo. Upon completion of the terms of the permit and closure and inspection-maintenance requirements in sections 444.352 to 444.380, RSMo, the financial assurance instrument may then be released from the benefit of the state of Missouri, back to the operator.

The financial assurance instrument must be signed by the operator and must be in the penal sum of $1,000 for each acre or fraction of an acre of the metallic minerals waste management area, but not less than $20,000 for each permit. No financial assurance instrument must be canceled or terminated by the operator except after no less than 90 days' notice and substitution by some other financial assurance approved by the staff director.

In the event a company guarantee is furnished, it must be in the form of a letter, duly executed by an officer of the company, guaranteeing the required amount of financial assurance, accompanied by a financial test statement demonstrating ownership of real property or mining rights in Missouri of an assessed valuation of at least three times the amount of required financial assurance.

ORGANIZATION

Land Reclamation Program Director and Missouri Mining Commission Members

Larry Lehman, Staff Director

Land Reclamation Program

Missouri Mining Commission

Public Members

Gregory Haddock, Ph.D., Chairman

Associate Provost of Graduate Studies and Special Programs

Northwest Missouri State University

Mike Larsen, RG, Vice Chairman

Leslie Gertsch, Ph.D.

Associate Professor of Geological Engineering

Missouri University of Science & Technology

One Vacancy, Surface Mining

One Vacancy, Subsurface Mining

Statutory Members

Aaron Jefferies, Designee

Missouri Department of Conservation

Joe Gillman, State Geologist, Director

Missouri Geological Survey

Missouri Department of Natural Resources

Chris Wieberg, Director

Clean Water Commission

Missouri Department of Natural Resources

INFORMATION ON THE INTERNET

Missouri Department of Natural Resources

Department Home Page	**dnr.mo.gov**
Land Reclamation Program	**dnr.mo.gov/land-geology/mining-land-reclamation**
Land Reclamation Program Forms	**dnr.mo.gov/forms-applications**
The Complete Missouri Mining Law	**revisor.mo.gov/main/OneChapter.aspx?chapter=444**
Code of State Regulations (see Division 40)	**sos.mo.gov/adrules/csr/current/10csr/10csr**

U.S. Department of the Interior, Office of Surface Mining

Office of Surface Mining, Washington, D.C.	**osmre.gov**

Other Mining and Reclamation Organizations

National Association of Abandoned Mine Land Programs	**naamlp.net**
Interstate Mining Compact Commission	**imcc.isa.us**
National Association of State Land Reclamationists	**naslr.org**
Missouri Limestone Producers Association	**molimestone.com**
The Mining Industry Council of Missouri	**momic.com**
American Society of Reclamation Sciences	**asrs.us**

Nothing in this document may be used to implement any enforcement action or levy any penalty unless promulgated or authorized by statute.

Reclamation completed at Hume West Mine.

MISSOURI
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Missouri Geological Survey

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dnr.mo.gov/land-geology/mining-land-reclamation

PUB3014 - 02/2022